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This treats of general principles, and is to be understood as being introductory, while the remaining parts will be devoted to the structure and further classification of birds; their general habits and instincts; the relations of their *habitat* or residence to physical causes, and to their geographical distribution; to which is to be added "a briefly descriptive catalogue of the birds of the Middle States," and "of many of the most beautiful or remarkable birds of the world." It is designed, also, to devote special attention to the structure and exquisite colors of the plumage, and the microscopic character of the downy covering of the young; a field of research as yet hardly approached, yet full of interest, and of practical value to science.

In this first part the writer very appropriately devotes several pages to an account of the structure of the egg, and the mode of development of life within it, and subsequently notices the differences noticed in the external form of the egg as seen in the different groups, and the peculiar variations in the color and texture of the shell. The greater part, however, is devoted to a discussion of the classification of birds; a new or considerably modified system of which is proposed. It shows that the writer has given the subject considerable thought, and is in many points highly commendable, in fact approaching in general more nearly to the natural system, than several of the classifications recently proposed by our (reputed) highest authorities. We scarcely see the propriety, however, of making a third sub-class of the Ostrich and the Dodo, and their respective allies, nor of dispersing the *Præcoces* so widely among the *Altrices*, as is done, not only in the present case but generally. The subdivision, by Oken (according to Agassiz, by Bonaparte as generally received), of birds into two grand divisions, be they sub-classes or orders, seems to have been a truthful and important recognition of two very natural groups, the subsequent mingling of which seems only to tend to prolong confusion. The parallelisms between the two groups pointed out by Professor Dana, or the occurrence of representative groups in each, seems strongly to corroborate their naturalness.

Miss Lewis's modestly written book, however, seems likely to supply a gap in our ornithological literature, and as it bears unmistakable marks of originality, and promises a clearly expressed epitome of the present state of the science, we heartily commend it as a work fully entitled to generous patronage.*—J. A. A.

REVIEW OF THE SCANDINAVIAN PUBLICATIONS IN NATURAL HISTORY DURING 1867 AND PART OF 1868.† (In a letter from Dr. Lütken of Copen-

* The Naturalist's Book Agency will supply this work at 35 cents a part.

† Dr. C. F. Lütken, an accomplished naturalist and assistant in the Royal Zoological Museum, at Copenhagen, has kindly consented to prepare for the *NATURALIST*, a yearly review of the progress of Natural History in Scandinavia, of which the following interesting report, to be concluded in the next number, relates to the literature of Denmark and Norway. The conclusion, embracing Sweden and Finland, will follow soon. As these works are rare and generally inaccessible, containing papers by the most thorough and reliable observers in Northern Europe, we think the readers of the *NATURALIST* are especially fortunate in securing such reports from the fountain head of natural science in Northern Europe.—EDS.

hagen, dated October 1, 1868.)—According to your request, I have the honor of laying before your readers a short summary of the latest scientific contributions of Scandinavian naturalists, to the progress of those departments of science to which your esteemed journal is devoted; but the limited space likely to be allowed to such a review will permit my giving little more than the titles of the papers. Nevertheless, I entertain the hope that it will be sufficient to show that the part taken by Scandinavian naturalists in the common work of the advancement of science, is important enough to justify the increasing attention bestowed upon this branch of scientific literature in later times abroad, especially in England and America; and I may be permitted to add, that nowhere ought the Scandinavian literature be better known. The Scandinavian tongues, and especially the Danish, enter so largely into the composition of the English language, that it must be a comparatively easy task for an American to make himself so far familiar with our language, that their rich literary treasures may not be unintelligible mysteries to him.

Permit me to begin with the scientific productions of my own country, with which I am of course best acquainted. Of papers falling within the limits of this review, the *Oversigt over det Kongelige danske videnskabener Selskabs Forhandlinger*, for 1866 and 1867 (Proceedings of the Royal Danish Academy of Science), contain the following: First, a critical essay from the pen of the Secretary (Professor Steenstrup), "On some of the more important results of the diggings made in the French bone-caves during late years," containing many important suggestions, but perhaps most worthy of serious attention by its opposing strongly some commonly diffused notions about the supposed contemporaneity of man and certain extinct animals, *as an established fact*. The author will only yield to positive material evidence of man's existence at a given epoch, deduced from his treatment in definite manner of the bones of the animals hunted, or from his having made unquestionable and authentic figures of them; and such arguments are as yet almost absolutely wanting; the "bare evidences" are rejected as utterly useless in this respect. Professor Reinhardt has described and figured (on two plates) three new species of *Characinoideis* from Lagoa Santa, Brazil (*Piabina*, new genus, *argentea* Reinh., *Characidium*, new genus, *fasciatum* Reinh., and *Parodon Hilarii* Reinh.). In the French "resumé," attached to this paper (as in fact to almost all the papers of the "Proceedings," for the purpose of making them more intelligible to foreigners), the author adds some interesting remarks on the geographical distribution of the Brazilian fresh-water fishes. Mr. Reinhardt has brought home from the Rio San Francisco, but especially from its tributary, the Rio das Velhas (Minas Geraes), twenty-five species of *Siluroideis*, twenty-six of *Characinoideis*, four of *Gymnotoideis*, and two of *Scienoideis*. Fourteen other fishes have been described from the same water-basin by other naturalists, and four more were mentioned by the residents of the country, but remarkably enough, there is not a single *Chromid*, though the adjoining waters are richly stocked with species of this family. Professor Hannover has given an abstract of his

researches on "the microscopical structure and development of the dermal teeth (scales and spines) of the *Chondropterygii*." The memoir is printed in full in the Transactions of the Academy, and illustrated with four plates and some figures in the text. French resumé's having been added both to the Memoir (at least to the copies separately printed), and to the paper in the "Proceedings," I shall confine myself to mentioning that the author has established four types of placoid dermal teeth according to the shape of the cells: the "conical" (dorsal spines of *Raja batis*), the "knoll-like" (scales of *Carcharias* and *Chiloscyllium*), the "net-shaped" (spines and scales of *Trygon*), and the "bundle-shaped" cell (*Pristis*). A chapter is added on the dental structure of the dermal plates of *Ostracion*, and a detailed description is given of some very enigmatical comb-like corneous bodies, preserved in the museums of Copenhagen, Christiana and Kiel, but of unknown origin: from their resemblance in microscopical structure to the dermal spines of skates, the author is inclined, I think, hardly with sufficient reason, to ascribe them in some way to this order of fishes.* Professor Johnstrup has discovered in the old Danish part of our neighbor-kingdom, at Annetorp, in the vicinity of Malmo, in Scania, a new locality for that remarkable limestone formation, termed the "Faxoe-limestone;" it is one of the youngest links of the Cretaceous formation in Scandinavia, and is extremely rich in fossils, being in fact a great fossil coral growth. At Annetorp the relations of this second deposit of Faxoe-limestone to the other stages of the Chalk formation are clearly indicated and have confirmed the position previously assigned to it. Professor Lange reviews the species of plants figured in the forty-sixth part of the "Flora Danica," and Professor Ørsted continues his curious experiments, demonstrating that certain fungi, parasitic on different species of plants, and described as distinct genera and species, are in reality only the *alternate generations of one species*. This he showed to be the case with *Podisoma Sabinæ* infesting the branches of the Savin, and *Ræstelia cancellata* (on the leaves of the pear), while *Podisoma clavariiforme*, residing on the branches of the juniper, manifests itself as the first asexual state (or generation) of the *Ræstelia penicillata* (lacuata), which gets its livelihood from the leaves of the apple and the white thorn; and *P. juniperinum*, inhabiting also the branches and leaves of the juniper, is in the like manner reduced to the corresponding form of the *Ræstelia cornifera* (cornuta), infesting the leaves of the Sorb (Mountain-ash). You will remember that the specific identity of *Puccinia graminis* and *Oidium berberidis* was in the like manner demonstrated some years ago through the almost contemporary experiments of De Bary and Ørsted, thus confirming the opinion for a long time fostered by farmers, but rejected as superstitious by most naturalists (Sir Joseph Banks excepted), on the obnoxious influence of the Barbary on the corn-fields.

* A few months since, Professor Baird placed in our hands a singular bony plate, received by him from Professor Jenks, the locality of which was unknown. From a microscopic section of this specimen we came to the conclusion that the plate must have belonged to some part of an unknown placoid fish; and from the slight description of Professor Hannover's specimen, we believe ours to be the same. — EDS.

During the last two years two volumes have been issued of the Transactions of the Royal Danish Academy of Science (Vols. VI. and VII.). They contain the following memoirs: Professor Hannover's Observations on Encysted Helminths in the Frog (with two plates), and on the Structure and Evolution of Scales and Spines in the Cartilaginous Fishes (spoken of above); Professor Johnstrup's Monograph of the Manner of Formation of the Faxoe-limestone, and its later alterations; Dr. Krabbe's Helminthological Researches in Denmark and Iceland, especially on the Echinococcus disease in the latter country; Dr. Bergh's Anatomical Contributions to the History of the Æolidiaceæ (with nine plates); Professor Ersted's on a peculiar, hitherto unknown, manner of Evolution in certain Parasitic Mushrooms, especially on the genetic connection between the Podisoma of the Savin and the Røstelia of the pear tree, and finally Dr. Gottscher's Monograph of the Hepatic Mosses of Mexico, described from the collection of the late Professor Liebmann. As most of these papers had been published separately before 1867, or have already been referred to above, it will be sufficient to direct the attention of botanists to the last-named voluminous memoir, by one of the first authorities on the subject. It is written in Latin, and illustrated by twenty plates, mostly representing species of Plagiochila. More than two hundred species of Hepaticæ were collected by Mr. Liebmann, and three-fourths of this number were new to science. In the Scientific Contributions from the Society of Natural History, for the years 1866 and 1867, you will also find various papers on Zoölogy and Botany. Dr. Krabbe forwarded two papers on Helminthology. In the first he treats of certain undeveloped nursing forms of *Tænia*, and their presumed corresponding mature species, namely, the so-termed *Gyporhynchus pusillus*, from the mucus of the intestine, and from the gall bladder of *Tinca*, in which the author has recognized the "nurses" respectively of *Tænia macroplos* (from *Ardea nyctivora*), and *T. corrylancristata* (from *Ardea nivæa*). *T. (cysticercus) arionis* (limacis) is probably the immature condition of *T. multiformis* of the Stork; and the miniature tape-worm observed by Stein in the *Tenebrio molitor* is identical with the *Tænia murina* of rats and mice as first suggested by Küchenmeister.

In a second paper Dr. Krabbe has described and figured the tape-worms of the bustard, *T. villosa* Bl., and *Idiogenes otidis*. The latter new genus is especially distinguished by the peculiar wing-like dilatations of the sixth and seventh anterior segments (the head). Dr. Bergh has continued his researches on the anatomy and systematic distribution of the Gymnobranchiate and allied Mollusca by the description and anatomical investigation of two species of *Phidiana* (P. inca D'Orb., and P. lynceus, new spec.). The accessory eye discovered in the latter species occasioned a closer investigation, and a refutation of the presumed epipodial eyes in *Margarita*, described by Mr. Agassiz. The author also strongly combats the fecal theory of the urticating corpuscles in Æolidiaceæ. In another part of the paper he describes a parasitic Crustacean (*Ismaila monstrosa*) found on *Phidiana lynceus*, and allied to, or at least analogous, to

Splanchnostrophus. Some notes on the latter genus, and on an *Acarus*, parasitic on *Galvina rupium* are added. Mr. Mörch has given a detailed account of the Mollusca of the Faroe Islands (Cephalopods, three species; Brachiopods, one species; Gasteropods, sixty-five; and Bivalves, forty-two species), illustrated by an instructive tabular synopsis of the geographical distribution of the Mollusks of Iceland and Faroe.

NATURAL HISTORY MISCELLANY.

ZOÖLOGY.

THE MOOSE TICK.—On the 13th of April a pair of young moose were brought through New York on their way to Europe. They were raised in Nova Scotia, and being very tame, were allowed to run at large. The cow moose would ramble off in the woods, and while there, had become infested with ticks; the bull had escaped contact with these insects. When the cow arrived in New York, her sides and back were almost covered with adult ticks. The insects were removed very much to the relief of the animal, and the ticks were placed in a bottle without food or water. On the 1st of May they commenced to lay eggs, and continued to do so until the 25th of June, when they died. The eggs are forced out in large masses. On the 3d of July, the day after I sent the drawings to you, the entire mass of eggs seemed to hatch out at once, the shell opening like a clam, and releasing a six-legged insect. — W. J. HAYS.

[The specimens sent us by Mr. Hays are very interesting, as showing that the young tick has only three pair of legs instead of four, which all adult spiders and mites (*Arachnida*) possess. This is a strong argument for the supposition that the Arachnids form an order in the class of insects, and not an independent class. Fig. 1 *e* represents the adult tick, drawn by Mr. Hays. The six-footed young has enormous legs, and the head is separated from the hind body, where in the adult it is sunken in the thorax. *d*, shows the claws, with a broad sucking disk beneath, enabling it to adhere to objects. On the right is a magnified drawing of the mouth parts of the young; *a*, is the labium, armed with hooks; *b*, the maxillæ, probably, also armed with powerful hooks, and *c*, the mandibles. Thus armed, the young tick buries itself in the flesh of its victim. — Eds.]

